# Appendix 4-11

# Estimated Construction Noise levels Due to Planned "RD Site"

**Appendix 4-11-1 Summary Table of Calculated Construction Noise Level at NSRs (Mitigated Scenario with QPMEs and Movable Noise Barriers)**

| NSR Label | Descriptions | Construction Noise Level from Each Work Group | | | | | | | Cumulative | | Highest Noise Level, dB(A) | Noise Criteria, dB(A) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | A+G+F | B+C | | |
| | | Site Formation, Filling and Excavation | Construction of Underground Services and Utilities | Road works | Foundation | Superstructure | Sub-structure (Pile Cap) | Dump Trucks Travelling on Haul Road | | | | |
| **Existing NSRs** | | | | | | | | | | | | |
| N1 | Fairview Park | 54 | 52 | 54 | 54 | 52 | 52 | 55 | 59 | 56 | **59** | 75 |
| N2 | Fairview Park | 54 | 52 | 54 | 54 | 52 | 52 | 56 | 59 | 56 | **59** | 75 |
| N3 | Fairview Park | 59 | 57 | 59 | 59 | 57 | 57 | 58 | 62 | 61 | **62** | 75 |
| N4 | Fairview Park | 60 | 58 | 60 | 60 | 58 | 58 | 59 | 64 | 62 | **64** | 75 |
| N5 | Fairview Park | 60 | 58 | 60 | 60 | 58 | 58 | 58 | 64 | 62 | **64** | 75 |
| N6 | Chuk Yuen Tsuen | 73 | 71 | 73 | 73 | 71 | 71 | 65 | 75 | 75 | **75** | 75 |
| N7 | Chuk Yuen Tsuen | 72 | 70 | 72 | 72 | 70 | 70 | 64 | 74 | 74 | **74** | 75 |
| N8 | Bethel High School | 57 | 55 | 57 | 57 | 55 | 55 | 57 | 61 | 59 | **61** | 70 (65 during examination) |
| N9 | Helene Terrace | 54 | 52 | 54 | 54 | 52 | 52 | 56 | 59 | 56 | **59** | 75 |
| N10 | Villa Camllia | 54 | 52 | 54 | 54 | 52 | 52 | 56 | 59 | 56 | **59** | 75 |
| N11 | Fairview Park | 53 | 51 | 53 | 53 | 51 | 51 | 55 | 58 | 55 | **58** | 75 |
| N12 | Wong Chan Sook Ying Memorial School | 52 | 50 | 52 | 52 | 50 | 50 | 54 | 57 | 54 | **57** | 70 (65 during examination) |
| N13 | Man Yuen Tsuen | 52 | 50 | 52 | 52 | 50 | 50 | 54 | 57 | 54 | **57** | 75 |
| N14 | Chuk Yuen Tsuen | 65 | 63 | 65 | 65 | 63 | 63 | 61 | 68 | 67 | **68** | 75 |
| N15 | Hang Fook Garden | 60 | 58 | 60 | 60 | 58 | 58 | 58 | 64 | 62 | **64** | 75 |
| N16 | Ha San Wai | 60 | 58 | 60 | 60 | 58 | 58 | 58 | 63 | 62 | **63** | 75 |
| N17 | Ha San Wai | 55 | 53 | 55 | 55 | 53 | 53 | 56 | 59 | 57 | **59** | 75 |
| **Planned NSRs** | | | | | | | | | | | | |
| V1P | Village Zone Development | 68 | 66 | 68 | 68 | 66 | 66 | 63 | 70 | 70 | **70** | 75 |
| V2P | Planned R(D) Zone | 55 | 53 | 55 | 55 | 53 | 53 | 56 | 58 | 58 | **58** | 75 |
| V3P | Planned R(D) Zone | 69 | 67 | 69 | 69 | 67 | 67 | 63 | 71 | 71 | **71** | 75 |
| V4P | Planned "V" Zone | 60 | 58 | 60 | 60 | 58 | 58 | 59 | 62 | 62 | **62** | 76 |

**Appendix 4-10-2 Plant Inventory and Calculated SWLs for Construction Noise Impact Assessment (with QPMEs, Movable Noise Barriers)**

| | | | PMEs Inventory - Mitigated (with QPMEs and Movable Noise Barriers) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Construction Activity** | **Sub. Work Group** | | **Powered Mechanical Equipment** | **Reference** | **SWL per unit** | **Qty** | **Total, SWL** | **Total SWL, dB(A)** | **At-source Noise Mitigation Measure** | **Noise Barrier Effect **** | **Total SWL (Mitigated)** | **Total SWL, dB(A)** | **Highest SWL of Each Construction Activity, dB(A) @** |
| (A) Site Formation, Filling and Excavation | A1 | Excavation and Filling | Air Compressor | CNP001 | 100 | 2 | 103 | 117 | Movable noise barrier | -10 | 93 | 112 | 112 |
| | | | Breaker, mini-robot mounted | EPD * | 115 | 1 | 115 | | Movable noise barrier and Installation of commercially made sound proof hammer bracket # & ## | -10 | 105 | | |
| | | | Excavator, wheeled/tracked | KATO model HD820V (EPD-01233) | 99 | 3 | 104 | | Movable noise barrier | -5 | 99 | | |
| | | | Generator, super silenced | CNP103 | 95 | 3 | 100 | | Movable noise barrier | -10 | 90 | | |
| | | | Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 4 | 111 | | | | 111 | | |
| | A2 | Ground Compression | Roller, vibratory | SAKAI model SW250-1 (EPD-00509) | 95 | 3 | 100 | 108 | | | 100 | 108 | |
| | | | Bulldozer | Komatsu modelled D21A-8 | 102 | 3 | 107 | | | | 107 | | |
| (B) Construction of Underground Services and Utilities | B1 | Earthwork | Breaker, mini-robot mounted | EPD * | 115 | 1 | 115 | 116 | Movable noise barrier and Installation of commercially made sound proof hammer bracket # & ## | -10 | 105 | 110 | 110 |
| | | | Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 2 | 108 | | | | 108 | | |
| | | | Excavator, mini-robot mounted | EPD * | 94 | 2 | 97 | | Movable noise barrier | -5 | 92 | | |
| | B2 | Utilities laying | Air Compressor | CNP001 | 100 | 2 | 103 | 110 | Movable noise barrier | -10 | 93 | 108 | |
| | | | Generator, super silenced | CNP103 | 95 | 2 | 98 | | Movable noise barrier | -10 | 88 | | |
| | | | Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 2 | 108 | | | | 108 | | |
| | | | Water Pump, Submersible(electric) | CNP283 | 85 | 2 | 88 | | Movable noise barrier | -10 | 78 | | |
| | B3 | Ground reinstatement | Concrete Lorry Mixer | CNP044 | 109 | 2 | 112 | 115 | Movable noise barrier | -10 | 102 | 105 | |
| | | | Power rammer (petrol) | Dynapac model LT700 (EPD-00536) | 107 | 2 | 110 | | Movable noise barrier | -10 | 100 | | |
| | | | Poker, vibratory, hand-held (electric) | EPD * | 102 | 2 | 105 | | Movable noise barrier | -10 | 95 | | |
| | | | Roller, vibratory | SAKAI model SW250-1 (EPD-00509) | 95 | 2 | 98 | | | | 98 | | |
| (C) Road Works | C1 | Earthwork | Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 3 | 110 | 110 | | | 110 | 110 | 112 |
| | | | Excavator, wheeled/tracked | KATO model HD820V (EPD-01233) | 99 | 2 | 102 | | Movable noise barrier | -5 | 97 | | |
| | C2 | Concreting Works | Concrete Lorry Mixer | CNP044 | 109 | 3 | 114 | 114 | Movable noise barrier | -10 | 104 | 105 | |
| | | | Generator, super silenced | CNP103 | 95 | 3 | 100 | | Movable noise barrier | -10 | 90 | | |
| | | | Poker, vibratory, hand-held (electric) | EPD * | 102 | 2 | 105 | | Movable noise barrier | -10 | 95 | | |
| | C3 | Road Finishing | Air Compressor | CNP001 | 100 | 2 | 103 | 114 | Movable noise barrier | -10 | 93 | 112 | |
| | | | Asphalt Paver | VOLVO model. No. ABG5770 (EPD-01226) | 104 | 2 | 107 | | | | 107 | | |
| | | | Generator, super silenced | CNP103 | 95 | 2 | 98 | | Movable noise barrier | -10 | 88 | | |
| | | | Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 3 | 110 | | | | 110 | | |
| | | | Power rammer (petrol) | Dynapac model LT700 (EPD-00536) | 107 | 2 | 110 | | Movable noise barrier | -10 | 100 | | |
| | | | Road roller | HITACHI model CP220-3 (EPD-01183) | 97 | 2 | 100 | | | | 100 | | |
| (D) Foundation | D1 | General foundation construction | Air Compressor | CNP001 | 100 | 5 | 107 | 118 | Movable noise barrier | -10 | 97 | 112 | 114 |
| | | | Bar bender and cutter (electric) | CNP021 | 90 | 5 | 97 | | Movable noise barrier | -10 | 87 | | |
| | | | Mobile Crane | Hitachi Sumitomo SCX700, 132kW | 101 | 3 | 106 | | Movable noise barrier | -5 | 101 | | |
| | | | Generator, super silenced | CNP103 | 95 | 4 | 101 | | Movable noise barrier | -10 | 91 | | |
| | | | Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 3 | 110 | | | | 110 | | |
| | | | Drill/grinder, hand-held (electric) | CNP065 | 98 | 4 | 104 | | Movable noise barrier | -10 | 94 | | |
| | | | Excavator, wheeled/tracked | KATO model HD820V (EPD-01233) | 99 | 3 | 104 | | Movable noise barrier | -5 | 99 | | |
| | | | Saw, circular, wood | CNP201 | 108 | 5 | 115 | | Movable noise barrier | -10 | 105 | | |
| | | | Water pump, submersible (electric) | CNP283 | 85 | 4 | 91 | | Movable noise barrier | -10 | 81 | | |

| | | | PMEs Inventory - Mitigated (with QPMEs and Movable Noise Barriers) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Construction Activity** | **Sub. Work Group** | | **Powered Mechanical Equipment** | **Reference** | **SWL per unit** | **Qty** | **Total, SWL** | **Total SWL, dB(A)** | **At-source Noise Mitigation Measure** | **Noise Barrier Effect **** | **Total SWL (Mitigated)** | **Total SWL, dB(A)** | **Highest SWL of Each Construction Activity, dB(A) @** |
| | D2 | Piling works | Generator, super silenced | CNP103 | 95 | 4 | 101 | 119 | Movable noise barrier | -10 | 91 | 114 | |
| | | | Continuous Flight Auger (CFA) piles (piling, earth auger) | CNP167 | 114 | 3 | 119 | | Movable noise barrier, and provision of acoustic shielding material | -5 | 114 | | |
| | D3 | Concreting works | Concrete Lorry Mixer | CNP044 | 109 | 5 | 116 | 117 | Movable noise barrier | -10 | 106 | 107 | |
| | | | Generator, super silenced | CNP103 | 95 | 4 | 101 | | Movable noise barrier | -10 | 91 | | |
| | | | Poker, vibratory, hand-held (electric) | EPD * | 102 | 4 | 108 | | Movable noise barrier | -10 | 98 | | |
| (E) Superstructure | E1 | General construction works | Air Compressor | CNP001 | 100 | 6 | 108 | 120 | Movable noise barrier | -10 | 98 | 110 | 110 |
| | | | Bar bender and cutter (electric) | CNP021 | 90 | 9 | 100 | | Movable noise barrier | -10 | 90 | | |
| | | | Mobile Crane | Hitachi Sumitomo SCX700, 132kW | 101 | 3 | 106 | | Movable noise barrier | -5 | 101 | | |
| | | | Drill/grinder, hand-held (electric) | CNP065 | 98 | 10 | 108 | | Movable noise barrier | -10 | 98 | | |
| | | | Generator, super silenced | CNP103 | 95 | 4 | 101 | | Movable noise barrier | -10 | 91 | | |
| | | | Saw, circular, wood | CNP201 | 108 | 12 | 119 | | Movable noise barrier | -10 | 109 | | |
| | E2 | Concreting works | Concrete Lorry Mixer | CNP044 | 109 | 8 | 118 | 120 | Movable noise barrier | -10 | 108 | 110 | |
| | | | Concrete Pump | CNP047 | 109 | 4 | 115 | | Movable noise barrier | -10 | 105 | | |
| | | | Generator, super silenced | CNP103 | 95 | 4 | 101 | | Movable noise barrier | -10 | 91 | | |
| | | | Poker, vibratory, hand-held (electric) | EPD * | 102 | 7 | 110 | | Movable noise barrier | -10 | 100 | | |
| (F) Sub-structure (Pile Cap) | F1 | General pile cap construction | Bar bender and cutter (electric) | CNP021 | 90 | 10 | 100 | 109 | Movable noise barrier | -10 | 90 | 108 | 110 |
| | | | Generator, super silenced | CNP103 | 95 | 5 | 102 | | Movable noise barrier | -10 | 92 | | |
| | | | Lorry (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 2 | 108 | | | 0 | 108 | | |
| | F2 | Concreting works | Concrete Lorry Mixer | CNP044 | 109 | 3 | 114 | 116 | Movable noise barrier | -5 | 109 | 110 | |
| | | | Concrete Pump | CNP047 | 109 | 1 | 109 | | Movable noise barrier | -10 | 99 | | |
| | | | Generator, super silenced | CNP103 | 95 | 6 | 103 | | Movable noise barrier | -10 | 93 | | |
| | | | Poker, vibratory, hand-held (electric) | EPD * | 102 | 2 | 105 | | Movable noise barrier | -10 | 95 | | |
| | F3 | Backfill and reinstate | Excavator, wheeled/tracked | KATO model HD820V (EPD-01233) | 99 | 2 | 102 | 103 | Movable noise barrier | -5 | 97 | 98 | |
| | | | Roller, vibratory | SAKAI model SW250-1 (EPD-00509) | 95 | 1 | 95 | | Movable noise barrier | -5 | 90 | | |
| (G) Dump Trucks Travelling on Haul Road During Site Formation | G | Dump Trucks Travelling on Haul Road | Dump Truck (5.5 tonne < Gross vehicle weight <= 38 tonne) | EPD * | 105 | 10 | 115 | 115 | | | 115 | 115 | 115 |

**Note**: Noise levels of the above construction plants are based on the "Technical Memorandum on Noise From Construction Work Other Than Percussive Piling" and EPD's QPMEs database (available at: http://www.epd.gov.hk/cgi-bin/npg/qpme/index.pl?lang=eng)

* EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

** According to EIAO Guidance Note No. 9/2010, with provision of noise barriers, a 5dB(A) noise reduction for movable plant, 10 dB(A) for stationary plant and 15 dB(A) for enclosed ones can be assumed.

\# According to "A Practical Guide for the Reduction of Noise from Construction Works" (page 11), published by HKSAR Gov. Environmental Protection Department, July 1989, excavated-mounted breaker with sound proof hammer bracket installed could achieve a noise reduction up to 10dB(A).

\## According to the "Best Practice Guide for Environmental Protection on Construction Sites", page 6-9, published by Hong Kong Construction Association, January 2009, excavator-mounted breaker with sound proof hammer bracket can achieve a noise reduction of up to 10dB(A). (Doc. Available at: http://www.hkca.com.hk/front/20090306bpg.pdf)

@ The highest SWL calculated for each Construction Activity for construction noise impact assessment. Each Construction Activity has been divided into several sub. work groups based on the sequence of construction works. The respective sub-work groups of each Construction Activity will not overlap with one another.

**Appendix 4-11-3 Calculation of Construction Noise Level (Mitigated Scenario with QPMEs and Movable Noise Barriers)**

| NSR | | Construction Activity | Total SWL, dB(A) | Dist. (NSR to Site Boundary) (A), m ** | Dist. (Site Boundary to Notional Source) (B), m ** & # | Horz. Distance (= A+B), m ** | Dist. Corr., dB(A) | Façade Corr., dB(A) | CNL, dB(A) |
|---|---|---|---|---|---|---|---|---|---|
| N1 | A | Site Formation, Filling and Excavation | 112 | 420 | 50 | 470 | -61.4 | 3.0 | 54 |
| | B | Construction of Underground Services and Utilities | 110 | 420 | 50 | 470 | -61.4 | 3.0 | 52 |
| | C | Road works | 112 | 420 | 50 | 470 | -61.4 | 3.0 | 54 |
| | D | Foundation | 112 | 420 | 50 | 470 | -61.4 | 3.0 | 54 |
| | E | Superstructure | 110 | 420 | 50 | 470 | -61.4 | 3.0 | 52 |
| | F | Sub-structure (Pile Cap) | 110 | 420 | 50 | 470 | -61.4 | 3.0 | 52 |
| N2 | A | Site Formation, Filling and Excavation | 112 | 382 | 50 | 432 | -60.7 | 3.0 | 54 |
| | B | Construction of Underground Services and Utilities | 110 | 382 | 50 | 432 | -60.7 | 3.0 | 52 |
| | C | Road works | 112 | 382 | 50 | 432 | -60.7 | 3.0 | 54 |
| | D | Foundation | 112 | 382 | 50 | 432 | -60.7 | 3.0 | 54 |
| | E | Superstructure | 110 | 382 | 50 | 432 | -60.7 | 3.0 | 52 |
| | F | Sub-structure (Pile Cap) | 110 | 382 | 50 | 432 | -60.7 | 3.0 | 52 |
| N3 | A | Site Formation, Filling and Excavation | 112 | 216 | 50 | 266 | -56.5 | 3.0 | 59 |
| | B | Construction of Underground Services and Utilities | 110 | 216 | 50 | 266 | -56.5 | 3.0 | 57 |
| | C | Road works | 112 | 216 | 50 | 266 | -56.5 | 3.0 | 59 |
| | D | Foundation | 112 | 216 | 50 | 266 | -56.5 | 3.0 | 59 |
| | E | Superstructure | 110 | 216 | 50 | 266 | -56.5 | 3.0 | 57 |
| | F | Sub-structure (Pile Cap) | 110 | 216 | 50 | 266 | -56.5 | 3.0 | 57 |
| N4 | A | Site Formation, Filling and Excavation | 112 | 174 | 50 | 224 | -55.0 | 3.0 | 60 |
| | B | Construction of Underground Services and Utilities | 110 | 174 | 50 | 224 | -55.0 | 3.0 | 58 |
| | C | Road works | 112 | 174 | 50 | 224 | -55.0 | 3.0 | 60 |
| | D | Foundation | 112 | 174 | 50 | 224 | -55.0 | 3.0 | 60 |
| | E | Superstructure | 110 | 174 | 50 | 224 | -55.0 | 3.0 | 58 |
| | F | Sub-structure (Pile Cap) | 110 | 174 | 50 | 224 | -55.0 | 3.0 | 58 |
| N5 | A | Site Formation, Filling and Excavation | 112 | 178 | 50 | 228 | -55.1 | 3.0 | 60 |
| | B | Construction of Underground Services and Utilities | 110 | 178 | 50 | 228 | -55.1 | 3.0 | 58 |
| | C | Road works | 112 | 178 | 50 | 228 | -55.1 | 3.0 | 60 |
| | D | Foundation | 112 | 178 | 50 | 228 | -55.1 | 3.0 | 60 |
| | E | Superstructure | 110 | 178 | 50 | 228 | -55.1 | 3.0 | 58 |
| | F | Sub-structure (Pile Cap) | 110 | 178 | 50 | 228 | -55.1 | 3.0 | 58 |
| N6 | A | Site Formation, Filling and Excavation | 112 | 3 | 50 | 53 | -42.5 | 3.0 | 73 |
| | B | Construction of Underground Services and Utilities | 110 | 3 | 50 | 53 | -42.5 | 3.0 | 71 |
| | C | Road works | 112 | 3 | 50 | 53 | -42.5 | 3.0 | 73 |
| | D | Foundation | 112 | 3 | 50 | 53 | -42.5 | 3.0 | 73 |
| | E | Superstructure | 110 | 3 | 50 | 53 | -42.5 | 3.0 | 71 |
| | F | Sub-structure (Pile Cap) | 110 | 3 | 50 | 53 | -42.5 | 3.0 | 71 |
| N7 | A | Site Formation, Filling and Excavation | 112 | 9 | 50 | 59 | -43.4 | 3.0 | 72 |
| | B | Construction of Underground Services and Utilities | 110 | 9 | 50 | 59 | -43.4 | 3.0 | 70 |
| | C | Road works | 112 | 9 | 50 | 59 | -43.4 | 3.0 | 72 |
| | D | Foundation | 112 | 9 | 50 | 59 | -43.4 | 3.0 | 72 |
| | E | Superstructure | 110 | 9 | 50 | 59 | -43.4 | 3.0 | 70 |
| | F | Sub-structure (Pile Cap) | 110 | 9 | 50 | 59 | -43.4 | 3.0 | 70 |
| N8 | A | Site Formation, Filling and Excavation | 112 | 259 | 50 | 309 | -57.8 | 3.0 | 57 |
| | B | Construction of Underground Services and Utilities | 110 | 259 | 50 | 309 | -57.8 | 3.0 | 55 |
| | C | Road works | 112 | 259 | 50 | 309 | -57.8 | 3.0 | 57 |
| | D | Foundation | 112 | 259 | 50 | 309 | -57.8 | 3.0 | 57 |
| | E | Superstructure | 110 | 259 | 50 | 309 | -57.8 | 3.0 | 55 |
| | F | Sub-structure (Pile Cap) | 110 | 259 | 50 | 309 | -57.8 | 3.0 | 55 |
| N9 | A | Site Formation, Filling and Excavation | 112 | 396 | 50 | 446 | -61.0 | 3.0 | 54 |
| | B | Construction of Underground Services and Utilities | 110 | 396 | 50 | 446 | -61.0 | 3.0 | 52 |
| | C | Road works | 112 | 396 | 50 | 446 | -61.0 | 3.0 | 54 |
| | D | Foundation | 112 | 396 | 50 | 446 | -61.0 | 3.0 | 54 |
| | E | Superstructure | 110 | 396 | 50 | 446 | -61.0 | 3.0 | 52 |
| | F | Sub-structure (Pile Cap) | 110 | 396 | 50 | 446 | -61.0 | 3.0 | 52 |
| N10 | A | Site Formation, Filling and Excavation | 112 | 382 | 50 | 432 | -60.7 | 3.0 | 54 |
| | B | Construction of Underground Services and Utilities | 110 | 382 | 50 | 432 | -60.7 | 3.0 | 52 |
| | C | Road works | 112 | 382 | 50 | 432 | -60.7 | 3.0 | 54 |
| | D | Foundation | 112 | 382 | 50 | 432 | -60.7 | 3.0 | 54 |
| | E | Superstructure | 110 | 382 | 50 | 432 | -60.7 | 3.0 | 52 |
| | F | Sub-structure (Pile Cap) | 110 | 382 | 50 | 432 | -60.7 | 3.0 | 52 |
| N11 | A | Site Formation, Filling and Excavation | 112 | 470 | 50 | 520 | -62.3 | 3.0 | 53 |
| | B | Construction of Underground Services and Utilities | 110 | 470 | 50 | 520 | -62.3 | 3.0 | 51 |
| | C | Road works | 112 | 470 | 50 | 520 | -62.3 | 3.0 | 53 |
| | D | Foundation | 112 | 470 | 50 | 520 | -62.3 | 3.0 | 53 |
| | E | Superstructure | 110 | 470 | 50 | 520 | -62.3 | 3.0 | 51 |
| | F | Sub-structure (Pile Cap) | 110 | 470 | 50 | 520 | -62.3 | 3.0 | 51 |
| N12 | A | Site Formation, Filling and Excavation | 112 | 519 | 50 | 569 | -63.1 | 3.0 | 52 |
| | B | Construction of Underground Services and Utilities | 110 | 519 | 50 | 569 | -63.1 | 3.0 | 50 |
| | C | Road works | 112 | 519 | 50 | 569 | -63.1 | 3.0 | 52 |
| | D | Foundation | 112 | 519 | 50 | 569 | -63.1 | 3.0 | 52 |
| | E | Superstructure | 110 | 519 | 50 | 569 | -63.1 | 3.0 | 50 |
| | F | Sub-structure (Pile Cap) | 110 | 519 | 50 | 569 | -63.1 | 3.0 | 50 |

| NSR | | Construction Activity | Total SWL, dB(A) | Dist. (NSR to Site Boundary) (A), m ** | Dist. (Site Boundary to Notional Source) (B), m **&# | Horz. Distance (= A+B), m ** | Dist. Corr., dB(A) | Façade Corr., dB(A) | CNL, dB(A) |
|---|---|---|---|---|---|---|---|---|---|
| N13 | A | Site Formation, Filling and Excavation | 112 | 531 | 50 | 581 | -63.3 | 3.0 | 52 |
| | B | Construction of Underground Services and Utilities | 110 | 531 | 50 | 581 | -63.3 | 3.0 | 50 |
| | C | Road works | 112 | 531 | 50 | 581 | -63.3 | 3.0 | 52 |
| | D | Foundation | 112 | 531 | 50 | 581 | -63.3 | 3.0 | 52 |
| | E | Superstructure | 110 | 531 | 50 | 581 | -63.3 | 3.0 | 50 |
| | F | Sub-structure (Pile Cap) | 110 | 531 | 50 | 581 | -63.3 | 3.0 | 50 |
| N14 | A | Site Formation, Filling and Excavation | 112 | 84 | 50 | 134 | -50.5 | 3.0 | 65 |
| | B | Construction of Underground Services and Utilities | 110 | 84 | 50 | 134 | -50.5 | 3.0 | 63 |
| | C | Road works | 112 | 84 | 50 | 134 | -50.5 | 3.0 | 65 |
| | D | Foundation | 112 | 84 | 50 | 134 | -50.5 | 3.0 | 65 |
| | E | Superstructure | 110 | 84 | 50 | 134 | -50.5 | 3.0 | 63 |
| N15 | A | Site Formation, Filling and Excavation | 112 | 178 | 50 | 228 | -55.1 | 3.0 | 60 |
| | B | Construction of Underground Services and Utilities | 110 | 178 | 50 | 228 | -55.1 | 3.0 | 58 |
| | C | Road works | 112 | 178 | 50 | 228 | -55.1 | 3.0 | 60 |
| | D | Foundation | 112 | 178 | 50 | 228 | -55.1 | 3.0 | 60 |
| | E | Superstructure | 110 | 178 | 50 | 228 | -55.1 | 3.0 | 58 |
| N16 | A | Site Formation, Filling and Excavation | 112 | 186 | 50 | 236 | -55.4 | 3.0 | 60 |
| | B | Construction of Underground Services and Utilities | 110 | 186 | 50 | 236 | -55.4 | 3.0 | 58 |
| | C | Road works | 112 | 186 | 50 | 236 | -55.4 | 3.0 | 60 |
| | D | Foundation | 112 | 186 | 50 | 236 | -55.4 | 3.0 | 60 |
| | E | Superstructure | 110 | 186 | 50 | 236 | -55.4 | 3.0 | 58 |
| | F | Sub-structure (Pile Cap) | 110 | 186 | 50 | 236 | -55.4 | 3.0 | 58 |
| N17 | A | Site Formation, Filling and Excavation | 112 | 361 | 50 | 411 | -60.3 | 3.0 | 55 |
| | B | Construction of Underground Services and Utilities | 110 | 361 | 50 | 411 | -60.3 | 3.0 | 53 |
| | C | Road works | 112 | 361 | 50 | 411 | -60.3 | 3.0 | 55 |
| | D | Foundation | 112 | 361 | 50 | 411 | -60.3 | 3.0 | 55 |
| | E | Superstructure | 110 | 361 | 50 | 411 | -60.3 | 3.0 | 53 |
| | F | Sub-structure (Pile Cap) | 110 | 361 | 50 | 411 | -60.3 | 3.0 | 53 |
| V1P | A | Site Formation, Filling and Excavation | 112 | 40 | 50 | 90 | -47.1 | 3.0 | 68 |
| | B | Construction of Underground Services and Utilities | 110 | 40 | 50 | 90 | -47.1 | 3.0 | 66 |
| | C | Road works | 112 | 40 | 50 | 90 | -47.1 | 3.0 | 68 |
| | D | Foundation | 112 | 40 | 50 | 90 | -47.1 | 3.0 | 68 |
| | E | Superstructure | 110 | 40 | 50 | 90 | -47.1 | 3.0 | 66 |
| | F | Sub-structure (Pile Cap) | 110 | 40 | 50 | 90 | -47.1 | 3.0 | 66 |
| V2P | A | Site Formation, Filling and Excavation | 112 | 332 | 50 | 382 | -59.6 | 3.0 | 55 |
| | B | Construction of Underground Services and Utilities | 110 | 332 | 50 | 382 | -59.6 | 3.0 | 53 |
| | C | Road works | 112 | 332 | 50 | 382 | -59.6 | 3.0 | 55 |
| | D | Foundation | 112 | 332 | 50 | 382 | -59.6 | 3.0 | 55 |
| | E | Superstructure | 110 | 332 | 50 | 382 | -59.6 | 3.0 | 53 |
| | F | Sub-structure (Pile Cap) | 110 | 332 | 50 | 382 | -59.6 | 3.0 | 53 |
| V3P | A | Site Formation, Filling and Excavation | 112 | 33 | 50 | 83 | -46.4 | 3.0 | 69 |
| | B | Construction of Underground Services and Utilities | 110 | 33 | 50 | 83 | -46.4 | 3.0 | 67 |
| | C | Road works | 112 | 33 | 50 | 83 | -46.4 | 3.0 | 69 |
| | D | Foundation | 112 | 33 | 50 | 83 | -46.4 | 3.0 | 69 |
| | E | Superstructure | 110 | 33 | 50 | 83 | -46.4 | 3.0 | 67 |
| | F | Sub-structure (Pile Cap) | 110 | 33 | 50 | 83 | -46.4 | 3.0 | 67 |
| V4P | A | Site Formation, Filling and Excavation | 112 | 175 | 50 | 225 | -55.0 | 3.0 | 60 |
| | B | Construction of Underground Services and Utilities | 110 | 175 | 50 | 225 | -55.0 | 3.0 | 58 |
| | C | Road works | 112 | 175 | 50 | 225 | -55.0 | 3.0 | 60 |
| | D | Foundation | 112 | 175 | 50 | 225 | -55.0 | 3.0 | 60 |
| | E | Superstructure | 110 | 175 | 50 | 225 | -55.0 | 3.0 | 58 |
| | F | Sub-structure (Pile Cap) | 110 | 175 | 50 | 225 | -55.0 | 3.0 | 58 |

**Remark**: ** Distance is based on shortest horizontal distance.

# The notional noise source location is assumed based on the methodology listed in the statutory Technical Memorandum on Noise from Construction work other than Percussive Piling and that used in the approved EIA report for Wo Shan Wai. It has been assumed that all PME items are operating and gathered within a worksite for a conservative assessment.

**Calculation of Noise Level Due to Travelling of Dump Truck within the Project Construction Area During Site Formation, Filling and Excavation Stage**

| NSR | | Construction Activity | No. of Trucks/ hr. | SWL per Unit, dB(A) | Horz. Distance From NSR, m | Average Speed, km/hr | Calculated LAeq Due to Travelling of Dump Truck, dB(A) @ |
|---|---|---|---|---|---|---|---|
| N1 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 470 | 10 | 55 |
| N2 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 432 | 10 | 56 |
| N3 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 266 | 10 | 58 |
| N4 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 224 | 10 | 59 |
| N5 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 228 | 10 | 58 |
| N6 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 53 | 10 | 65 |
| N7 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 59 | 10 | 64 |
| N8 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 309 | 10 | 57 |
| N9 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 446 | 10 | 56 |
| N10 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 432 | 10 | 56 |
| N11 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 520 | 10 | 55 |
| N12 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 569 | 10 | 54 |
| N13 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 581 | 10 | 54 |
| N14 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 134 | 10 | 61 |
| N15 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 228 | 10 | 58 |
| N16 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 236 | 10 | 58 |
| N17 | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 411 | 10 | 56 |
| V1P | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 90 | 10 | 63 |
| V2P | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 382 | 10 | 56 |
| V3P | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 83 | 10 | 63 |
| V4P | G | Dump Trucks Travelling on Haul Road | 10 | 115 | 225 | 10 | 59 |

**Remark**: * According to information available at EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

@ Based on equation in the British Standard "Noise Control on Construction and Open Sites, BS 5228: Part 1: 2009": LAeq = SWL – 33 + 10log10 Q – 10 Log10 V – 10log10d

Where,

SWL = Sound Power Level of the dump truck

Q is the number of vehicles per hour

V is the average speed (10 km/hr)

| NSR | Construction Activity | Total SWL, dB(A) | Dist. (NSR to Site Boundary) (A), m ** | Dist. (Site Boundary to Notional Source) (B), m **&# | Horz. Distance (= A+B), m ** | Dist. Corr., dB(A) | Façade Corr., dB(A) | CNL, dB(A) |
|---|---|---|---|---|---|---|---|---|

D is the distance of receiver position from the haul road (m) (the horizontal distance between the receiver position and the construction notional noise source is taken in this noise assessment)